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International Specialists in the Environment

MEMORANDUM

DATE: December 11, 1989

TO: David Bennett, HWD, USEPA, Region 10

THRU: For Jeffrey Villnow, FITOM, E & E, Seattle

FROM: For Mark Ader, FIT-PM, E & E, Seattle

SUBJ: Preliminary Revised HRS II Score
Magnum Salvage/Horizon Vehicle
Albany, Oregon

REF: TDD F10-8910-014
PAN FOR0222SD

CC: John Osborn, FIT-RPO, USEPA, Region 10
Gerald B. Lee, FIT-PD, E & E, Seattle, (memo only)
William Glasser, HWD-SM, USEPA, Region 10, (memo only)

A preliminary EPA Revised Hazard Ranking System (HRS II) score was calculated for the Magnum Salvage site based on data collected during the Screening Site Inspection. As indicated in the attached documentation package and score sheets, a preliminary hazard migration mode score of 13.524 was calculated based on known information and, when necessary, professional assumptions. Additional information will probably not result in a higher score.

MA:rls

Enclosures

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PRESCORE PACKAGE

SSI STAGE

Site Name:	Magnum Salvage/Horizon Vehicles
EPA ID#:	ORD981767478
TDD#:	F10-8910-014
City:	Albany, Oregon
County:	Linn
Site Evaluation:	Mark Ader
Date:	December 1989

Name: Ecology & Environment, Inc. **Location:** Albany, Oregon

Site Name: Magnum Salvage/Horizon Vehicles

Date: December 1989

PHASE II FIELD TESTING PROJECT

REVISED HRS SCORESHEET

SSI STAGE

INSTRUCTIONS

The recommended overall data collection strategy during the SSI is to refine/verify/augment desktop data collected during the PA, obtain all non-sampling field data, and focus sampling efforts on verifying or limiting "critical" revised HRS factors values. Therefore, during PreScore at the SSI stage, you should be able to refine the preliminary and projected HRS scores for a site based on more accurate and comprehensive site specific information. The preliminary and projected scores for a site should begin to converge toward the "representative" site score. It is important to keep in mind that, as with PreScore at the PA stage, it is the projected HRS score that will be the principle mechanism which determines if a site will go on to an LSI or be recommended for "No Further Remedial Action Planned" under the Federal CERCLA program.

The attached scoresheets are part of the deliverable package for each site involved in the SSI stage of Phase II. During PRESCORE, you should document the preliminary and projected assigned value for each revised HRS factor and subfactor. For each projected HRS value, check one of the three boxes in the "Data Type" column to categorize the type of data used to document that value. Table Values should not be used during PRESCORE at the SSI stage.

H: Hard Data - Data that would satisfy formal HRS quality assurance requirements. This type of data is usually obtained from independent, defensible sources and requires little or no interpretation. A check in this column indicates that data collection for the factor is complete and will require no further investigation.

E: Estimated Data - Reasonable approximation based on the judgment of the SSI investigator. A check in this column indicates that the factor requires further investigation for LSI candidate sites.

D: Database - Data obtained from online database sources (e.g., GEMS).

Provide a reference for each value in the "Raw Data/Reference" column. Also, at a minimum, please complete the calculation tables following each pathway. Waste quantity worksheets provided by MITRE during the June 14th Project Orientation program are included to aid waste quantity calculations. Use the blank sheets to document calculations that were performed or assumptions that were made. For factors which do not require extensive calculations, enter the actual data in the "Raw Data/Reference" column.

SSI PRESCORE SCORESHEETS
SUMMARY SCORESHEET FOR COMPUTING S_m

PRELIMINARY HRS SCORE
DRAFT

	S pathway	S^2 pathway
Air Migration Pathway Score (S_a)	3.0	9.0
Groundwater Migration Pathway Score (S_{gw})	25.41	645.668
Surface Water Migration Pathway Score (S_{sw})	8.518	72.556
On-Site Exposure Pathway Score (S_{os})	2.10	4.41
$S^2_a + S^2_{gw} + S^2_{sw} + S^2_{os}$		731.634
$(S^2_a + S^2_{gw} + S^2_{sw} + S^2_{os})/4$		182.909
$\sqrt{(S^2_a + S^2_{gw} + S^2_{sw} + S^2_{os})/4}$		13.524

PROJECTED HRS SCORE
DRAFT

	S pathway	S^2 pathway
Air Migration Pathway Score (S_a)		
Groundwater Migration Pathway Score (S_{gw})		
Surface Water Migration Pathway Score (S_{sw})		
On-Site Exposure Pathway Score (S_{os})		
$S^2_a + S^2_{gw} + S^2_{sw} + S^2_{os}$		
$(S^2_a + S^2_{gw} + S^2_{sw} + S^2_{os})/4$		
$\sqrt{(S^2_a + S^2_{gw} + S^2_{sw} + S^2_{os})/4}$		

SSI PRESCORE SCORESHEETS
PHASE II FIELD TESTING AIR MIGRATION PATHWAY SCORESHEET

Factor Categories and Factors	Max Value	Preliminary HRS Value Assigned	Projected HRS Value Assigned	Data Type H	Data Type E	Data Type D	Data Type T	Raw Data / Comments
LIKELIHOOD OF RELEASE							XXX XXX XXX	
1. OBSERVED RELEASE	450	0					XXX XXX	No sample data exist
2. POTENTIAL TO RELEASE	390	90		✓			XXX XXX	3 × 30 = 90
Source Containment	3	3		✓			XXX XXX	E & E 1989a
Gas	3	3		✓			XXX XXX	E & E 1989a
Particulate	3	3		✓			XXX XXX	E & E 1989a
Source Type	80	0		✓			XXX XXX	E & E 1989a
Source Mobility	50	30		✓			XXX XXX	E & E 1989a
Gas	3	3		✓			XXX XXX	E & E 1989a
Particulate	3	0		✓			XXX XXX	PE = 153
3. LIKELIHOOD OF RELEASE (Higher of lines 1 or 2)	450	90		✓			XXX XXX XXX XXX	
WASTE CHARACTERISTICS							XXX XXX XXX	
4. TOXICITY/MOBILITY	100	100					XXX XXX	Table
Toxicity	5	5		✓			XXX XXX	PCB = 5
Mobility	3	3		✓			XXX XXX	PCB = 3
5. HAZARDOUS WASTE QUANTITY	100	10		✓			XXX XXX	E & E 1989a
6. WASTE CHARACTERISTICS (Lines 4+5)	200	110					XXX XXX XXX XXX	
TARGETS							XXX XXX XXX	
7. MEI	50	50		✓			XXX XXX	E & E 1989a; USGS 1970
8. POPULATION	235	3		✓			XXX XXX	E & E 1989a; USGS 1970
9. LAND USE	10	10		✓			XXX XXX	E & E 1989a; USGS 1970
10. SENSITIVE ENVIRONMENTS	100	1			✓		XXX XXX	E & E 1989a; USGS 1970
11. TARGETS (Lines 7+8+9+10)	235	64		✓			XXX XXX	E & E 1989a; USGS 1970

SSI PRESCORE SCORESHEETS
PHASE II FIELD TESTING AIR MIGRATION PATHWAY SCORESHEET

Factor Categories and Factors	Max Value	Preliminary HRS Value Assigned	Projected HRS Value Assigned	Data Type H	Data Type E	Data Type D	Data Type T	Raw Data / Comments
12. PATHWAY SCORES (S_a) [Lines 3x6x11)/2.115 x 10^5]	100	3.0					XXX XXX XXX XXX XXX	90 x 110 x 64 = $\frac{633,600}{2.115} \times 10^5$

AIR PATHWAY CALCULATIONS

2. Potential to Release

Source	Source Type	Source Type Factor Value (Table 2-6)	Source Mobility Factor Value (Table 2-10)	Sum	Source Contain. Value (Tables 2-4,2-5)	Emission Source Value
		(A)	(B)	(A + B)	(C)	(A+B) × C
1.	Contaminated soil does not meet minimum size requirement	0	30	30	3	90

Reference: E & E 1989a

8. Population

Distance Category	Distance (miles)	(A) Population	(B) Distance Weight	(A × B)
1	On site	2	5.265	0
2	> 0 to 1/4	30	1.0	0
3	>1/4 to 1/2	50	0.1751	0
4	>1/2 to 1	320	0.0517	0
5	> 1 to 2	2,600	0.0171	0
6	> 2 to 3	10,000	0.0083	83.00
7	> 3 to 4	15,000	0.0054	81.00

Air target populations = $\frac{\text{(Sum of A×B)}}{100}$ = 1.64

Sum of (A × B) = 164.00

Reference: USGS 1970; E & E 1989a

AIR PATHWAY CALCULATIONS (Cont.)

9. Land Use

Land Use	Distance (miles)	(A) Distance Weight (Table 2-16)	(B) Value For Use Type	(A × B)
Commercial/Industrial/ Institutional	0.100	1.000	5	5
Single Family Residential	0.100	1.000	8	8
Multiple Family Residential	1.000	0.051	10	1
Parks	1.000	0.051	5	0
Prime Agricultural	0.500	0.175	7	1
Nonprime Agricultural	1.000	0.051	5	0
			Sum of (A × B)	15

Land use factor value = Sum of (A × B), subject to maximum value of 10 = 10

Reference: USGS 1970; E & E 1989a

10. Sensitive Environments

Type and Number of Sensitive Environments	(A) Assigned Value (Table 2-18)	Distance (miles)	(B) Distance Weight (Table 2-16)	(A × B)
Small Lake	75	1.000	0.051	3.825
Willamette River	75	2.00	0.051	3.825
			Sum of (A × B)	7.650

Sensitive environment factor value = $\frac{\text{Sum of (A × B)}}{10} = \frac{7.65}{10} - .765 = 1$

Reference: USGS 1970; E & E 1989a

Calculations: In the space below, document all assumptions, estimates and calculations involved in assigning a projected HRS value.

Source Containment

The source type is contaminated soil. There is no containment system at the site. The source area was based on the assumption that there is 10 acres of contaminated soil (E & E 1989a).

Waste Characteristics

Analytical results from surficial soil samples indicated that elevated concentrations PCB and inorganic elements are present at the site (E & E 1989a).

Population

House counting data was used to establish populations for the air route within a 4-mile radius of the site (USGS 1970).

SSI PRESCORE SCORESHEETS
PHASE II FIELD TESTING GROUNDWATER MIGRATION PATHWAY SCORESHEET

Factor Categories and Factors	Max Value	Preliminary HRS Value Assigned	Projected HRS Value Assigned	Data Type H	Data Type E	Data Type D	Data Type T	Raw Data / Comments
LIKELIHOOD OF RELEASE							XXX XXX XXX	
1. OBSERVED RELEASE	500	0		✓			XXX XXX	No documentation exist
2. POTENTIAL TO RELEASE							XXX XXX	
a. Containment	10	10		✓			XXX XXX	E & E 1989a
b. Net Precipitation	10	6		✓			XXX XXX	NOAA 1979
c. Depth to Aquifer/Hydraulic Conductivity	35	35					XXX XXX XXX XXX	ODWR 1989b
Depth to Aquifer (feet)	7	20		✓			XXX XXX	ODWR 1989b
Hydraulic Conductivity	3	1×10^{-3}		✓			XXX XXX	ODWR 1989b
d. Sorptive Capacity	5	3		✓			XXX XXX	ODWR 1989b
e. Potential to Release [Lines ax(b+c+d)]	500	440					XXX XXX XXX XXX	
3. LIKELIHOOD OF RELEASE (Higher of lines 1 or 2e)	500	440					XXX XXX XXX XXX	
WASTE CHARACTERISTICS							XXX XXX XXX	
4. TOXICITY/MOBILITY	100	100					XXX XXX	Table
Toxicity	5	5		✓			XXX XXX	Arsenic = 5
Mobility	3	3		✓			XXX XXX	Arsenic = 3
5. HAZARDOUS WASTE QUANTITY	100	10		✓			XXX XXX	E & E 1989a
6. WASTE CHARACTERISTICS (Lines 4+5)	200	110					XXX XXX XXX XXX	100 + 10 = 110
TARGETS							XXX XXX XXX	
7. MEI	50	50		✓			XXX XXX	ODWR 1989b
8. POPULATION							XXX XXX	
a. Level I Concentrations	200	0		✓			XXX XXX	USGS 1970; ODWR 1989b
b. Level II Concentrations	200	0		✓			XXX XXX	USGS 1970; ODWR 1989b
c. Level III Concentrations	200	0		✓			XXX XXX	USGS 1970; ODWR 1989b

SSI PRESCORE SCORESHEETS

PHASE II FIELD TESTING GROUNDWATER MIGRATION PATHWAY SCORESHEET

Factor Categories and Factors	Max Value	Preliminary HRS Value Assigned	Projected HRS Value Assigned	Data Type H	Data Type E	Data Type D	Data Type T	Raw Data / Comments
d. Potential Contamination	200	5		✓			XXX XXX	ODWR 1989b
e. Population (Lines a+b+c+d, maximum of 200)	200	5		✓			XXX XXX XXX XXX	ODWR 1989b
9. GROUNDWATER USE							XXX XXX	
a. Drinking Water Use	50	40		✓			XXX XXX	ODWR 1989b; E & E 1989
b. Other Water Use	20	20		✓			XXX XXX	ODWR 1989b; E & E 1989
c. Groundwater Use (Lines a+b, maximum of 50)	50	50		✓			XXX XXX XXX XXX	40 + 20 = 60, maximum 50
10. SOLE SOURCE AQUIFER	50	0					XXX XXX	
11. TARGETS (Lines 7+8e+9c+10, maximum of 200)	200	105		✓			XXX XXX XXX XXX	50 + 5 + 50 + 0 = 105
GROUNDWATER MIGRATION PATHWAY SCORE							XXX XXX XXX XXX XXX	
12. AQUIFER SCORE [(Lines 3×6×11)/2×10^5]	100	25.41					XXX XXX XXX XXX XXX	440 × 110 × 105/2 × 10^5 = 25.41
13. **PATHWAY SCORE (S_{gw})** (Highest value from Line 12 for all aquifers evaluated)	100	25.41					XXX XXX XXX XXX XXX XXX	

GROUNDWATER PATHWAY CALCULATIONS

2. Potential to Release

Layer Description	(T) Thickness(ft)	(HC) Hydraulic Conductivity (cm/sec)	(SC) Sorbent Content	(T/HC)	(T×SC)
Silty sand/clay	29	1.0 E-03	64%	19,000	12.16
	Sum(T) 20			Sum(T/HC) = 19,000	Sum(T×SC) = 12.16

Depth to Aquifer/Hydraulic Conductivity = $\frac{\text{Sum(T)}}{\text{Sum(T/HC)}}$ = 0.001

Sorbent Content = $\frac{\text{Sum(T} \times \text{SC)}}{100}$ = 0.1216

Reference: ODWR 1989b

8. Population

Actual Contamination - N/A

Well Identifier	Contaminant Detected	Concentration	Benchmark	(A) Population	(B) Level* Divisor	(A/B)

Sum (A/B) Level I _____

Sum (A/B) Level II _____

Sum (A/B) Level III _____

* Divisors
- Level I = 1
- Level II = 10
- Level III = 100

Reference: E & E 1989a

GROUNDWATER PATHWAY CALCULATIONS (Cont.)

8. Population

Potential Contamination

Dilution Weighting Factor (DW)

Distance (miles)	Karst	All Others	(P) Population	(DW × P)
0 to 1/4	1.00	1.00	35	35
>1/4 to 1/2	0.62	0.62	50	31
>1/2 to 1	0.50	0.32	660	211.2
> 1 to 2	0.50	0.18	538	96.84
> 2 to 3	0.50	0.13	400	52.00
> 3 to 4	0.50	0.08	600	48.00
			Sum (DW × P)	474.04

Potential contamination = $\frac{\text{Sum}(DW \times P)}{100} = \frac{474.04}{100} = 4.74 = 5.0$

Reference: ODWR 1989b

Calculations: In the space below, document all assumptions, estimates and calculations involved in assigning a projected HRS value.

Source Containment

See air route for the source containment that was observed during the site inspection (E & E 1989a).

Drinking Water Use

Groundwater is used for drinking by a population of approximately 2,500 within a 4-mile radius of the site (ODWR 1989b). The distance from the site to the nearest well is 0.10 miles. Well logs indicate that there are several irrigation wells within 4 miles of the site (ODWR 1989b).

SSI PRESECORE SCORESHEETS

PHASE II FIELD TESTING SURFACE WATER MIGRATION PATHWAY SCORESHEET

Factor Categories and Factors	Max Value	Preliminary HRS Value Assigned	Projected HRS Value Assigned	Data Type H	Data Type E	Data Type D	Data Type T	Raw Data / Comments
DRINKING WATER THREAT							XXX	
LIKELIHOOD OF RELEASE							XXX	
1. OBSERVED RELEASE	120	0		✓			XXX	No documented observed release
2. POTENTIAL TO RELEASE BY OVERLAND FLOW							XXX	
a. Containment	10	10		✓			XXX	E & E 1989a
b. Runoff	6	4					XXX	Table
Rainfall (inches)	10	2.5		✓			XXX	NOAA 1973
Runoff Curve Number	100	80					XXX	Table
Drainage Area	3	1		✓			XXX	E & E 1989a
c. Distance to Surface Water	6	5		✓			XXX	E & E 1989a
d. Potential to Release by Overland Flow (Lines a×(b+c))	120	90					XXX	10 × (4 + 5) = 90
3. POTENTIAL TO RELEASE BY FLOOD							XXX	
a. Containment (Flood)	10	10		✓			XXX	E & E 1989a
b. Flood Frequency	12	0		✓			XXX	E & E 1989a
c. Potential to Release by Flood (Lines a×b)	120	0		✓			XXX	10 × 0 = 0
4. POTENTIAL TO RELEASE (Lines 2d+3c, maximum of 120)	120	90					XXX	90 + 0 = 90
5. LIKELIHOOD OF RELEASE (Higher of lines 1 or 4)	120	90					XXX	
WASTE CHARACTERISTICS							XXX	
6. TOXICITY/PERSISTENCE	100	100		✓			XXX	E & E 1989a
Toxicity	5	5		✓			XXX	Arsenic = 5
Persistence	3	3		✓			XXX	Arenic = 3

SSI PRESCORE SCORESHEETS

PHASE II FIELD TESTING SURFACE WATER MIGRATION PATHWAY SCORESHEET

Factor Categories and Factors	Max Value	Preliminary HRS Value Assigned	Projected HRS Value Assigned	Data Type H	Data Type E	Data Type D	Data Type T	Raw Data / Comments
7. HAZARDOUS WASTE QUANTITY	100	10				✓	XXX XXX	E & E 1989a
8. WASTE CHARACTERISTICS (Lines 6+7)	200	110					XXX XXX XXX XXX	100 + 10 = 110
TARGETS							XXX XXX XXX	
9. MEI	50	0		✓			XXX XXX	ODWR 1989a
10. POPULATION							XXX XXX	
a. Level I Concentrations	200	0		✓			XXX XXX	ODWR 1989a; E & E 1989a
b. Level II Concentrations	200	0		✓			XXX XXX	ODWR 1989a; E & E 1989a
c. Level III Concentrations	200	0		✓			XXX XXX	ODWR 1989a; E & E 1989a
d. Potential Contamination	200	0		✓			XXX XXX	ODWR 1989a; E & E 1989a
e. Population (Lines a+b+c+d, maximum of 200)	200	0		✓			XXX XXX XXX XXX	
11. SURFACE WATER USE							XXX XXX	
a. Drinking Water Use	50	5		✓			XXX XXX	ODWR 1989a; E & E 1989a
b. Other Water Use	20	20		✓			XXX XXX	ODWR 1989a; E & E 1989a
c. Surface Water Use (Lines a+b)	50	25		✓			XXX XXX XXX XXX	ODWR 1989a; E & E 1989a
12. TARGETS (Lines 9+10e+11c, maximum of 200)	200	0					XXX XXX XXX XXX	Zero due to fisheries
DRINKING WATER THREAT SCORE							XXX XXX XXX	
13. DRINKING WATER THREAT (Lines 5×8×12)	4.8×10^6	0					XXX XXX XXX XXX XXX	
HUMAN FOOD CHAIN THREAT							XXX XXX XXX	
LIKELIHOOD OF RELEASE							XXX XXX XXX	
14. LIKELIHOOD OF RELEASE (Same value as Line 5)	120	90					XXX XXX XXX XXX	

SSI PRESCORE SCORESHEETS

PHASE II FIELD TESTING SURFACE WATER MIGRATION PATHWAY SCORESHEET

Factor Categories and Factors	Max Value	Preliminary HRS Value Assigned	Projected HRS Value Assigned	Data Type H	Data Type E	Data Type D	Data Type T	Raw Data / Comments
WASTE CHARACTERISTICS							XXX XXX XXX	
15. TOXICITY/PERSISTENCE	100	100					XXX XXX	Table
Toxicity	5	5		✓			XXX XXX	PCBs = 5
Persistence	3	3		✓			XXX XXX	PCBs = 3
16. HAZARDOUS WASTE QUANTITY	100	10		✓		✓	XXX XXX	E & E 1989a
17. WASTE CHARACTERISTICS (Lines 15+16)	200	110					XXX XXX XXX XXX	100 + 10 = 110
TARGETS							XXX XXX XXX	
18. POPULATION							XXX XXX	
a. Potential Contamination	200	9		✓			XXX XXX	Table
Bioaccumulation Value	6	6		✓			XXX XXX	PCBs = 6
Production Value	8	4		✓			XXX XXX	ODFW 1989
b. Actual Contamination	200	0			✓		XXX XXX	No data available
c. Population (Lines a+b, maximum of 200)	200	9					XXX XXX XXX XXX	9 + 0 = 9
19. FISHERY USE	50	30		✓			XXX XXX	ODFW 1989
20. TARGETS (Lines 18c+19, maximum of 200)	200	39		✓			XXX XXX XXX XXX	9 + 30 = 39
HUMAN FOOD CHAIN THREAT SCORE							XXX XXX XXX	
21. HUMAN FOOD CHAIN THREAT (Lines 14×17×20)	4.8×10^6	398,970					XXX XXX XXX XXX XXX	110 × 93 × 39 = 398,970
HUMAN RECREATION THREAT							XXX XXX XXX	
LIKELIHOOD OF RELEASE							XXX XXX XXX	
22. LIKELIHOOD OF RELEASE (Same value as Line 5)	120	90					XXX XXX XXX XXX	
WASTE CHARACTERISTICS							XXX XXX XXX	

SSI PRESCORE SCORESHEETS

PHASE II FIELD TESTING SURFACE WATER MIGRATION PATHWAY SCORESHEET

Factor Categories and Factors	Max Value	Preliminary HRS Value Assigned	Projected HRS Value Assigned	Data Type H	Data Type E	Data Type D	Data Type T	Raw Data / Comments
23. TOXICITY/PERSISTENCE	100	100					XXX XXX	Table
Toxicity	5	5		✓			XXX XXX	PCBs = 5
Persistence	3	3		✓			XXX XXX	PCBs = 3
24. HAZARDOUS WASTE QUANTITY	100	10				✓	XXX XXX	E & E 1989a
25. WASTE CHARACTERISTICS (Lines 23+24)	200	110					XXX XXX XXX XXX	100 + 10 = 110
TARGETS							XXX XXX XXX	
26. POPULATION							XXX XXX	
a. Actual Contamination (Highest value assigned to any recreation area, maximum of 200)	200	0					XXX XXX XXX XXX XXX XXX XXX XXX	
Recreation Use	7	0					XXX XXX	Not evaluated
Dose Adjusting Factor	6	1					XXX XXX	
b. Potential Contamination (Highest value assigned to any recreation area, maximum of 200)	200	0					XXX XXX XXX XXX XXX XXX XXX XXX	
c. Population (Higher of values on Lines a or b)	200	0					XXX XXX XXX XXX	
27. TARGETS (Value from Line 26c)	200	0					XXX XXX	
HUMAN RECREATION THREAT SCORE							XXX XXX XXX	
28. HUMAN RECREATION THREAT (Lines 22x25x27)	4.8×10^6	0					XXX XXX XXX XXX XXX	
ENVIRONMENTAL THREAT							XXX XXX XXX	
LIKELIHOOD OF RELEASE							XXX XXX XXX	
29. LIKELIHOOD OF RELEASE (Same value as Line 5)	120	90					XXX XXX XXX XXX	

SSI PRESCORE SCORESHEETS

PHASE II FIELD TESTING SURFACE WATER MIGRATION PATHWAY SCORESHEET

Factor Categories and Factors	Max Value	Preliminary HRS Value Assigned	Projected HRS Value Assigned	Data Type H	Data Type E	Data Type D	Data Type T	Raw Data / Comments
WASTE CHARACTERISTICS								
30. ECOSYSTEM TOXICITY/PERSISTENCE	100	100						Table
Ecosystem Toxicity	5	5		✓				PCBs = 5
Persistence	3	3		✓				PCBs = 3
31. HAZARDOUS WASTE QUANTITY	100	10				✓		E & E 1989
32. WASTE CHARACTERISTICS (Lines 30+31)	200	110						100 + 10 = 110
TARGETS								
33. SENSITIVE ENVIRONMENTS								
a. Level I Concentrations	120	0			✓			No documented contamination
b. Level II Concentrations	120	0			✓			No documented contamination
c. Potential Contamination	120	1			✓			
d. Sensitive Environments (Lines a+b+c, maximum of 120)	120	1						
34. TARGETS (Value from Line 33d)	120	1			✓			
ENVIRONMENTAL THREAT SCORE								
35. ENVIRONMENTAL THREAT (Lines 29×32×34)	2.88×10^6	9,900						90 × 110 × 1 = 9,900
SURFACE WATER MIGRATION PATHWAY SCORE FOR A WATERSHED								
36. WATERSHED SCORE [(Lines 13+21+28+35)/48,000, maximum of 100)	100	8.52						0 + 398,970 + 0 + 9,900 = 408,870
SURFACE WATER MIGRATION PATHWAY SCORE								

SSI PRESCORE SCORESHEETS
PHASE II FIELD TESTING SURFACE WATER MIGRATION PATHWAY SCORESHEET

Factor Categories and Factors	Max Value	Preliminary HRS Value Assigned	Projected HRS Value Assigned	Data Type H	Data Type E	Data Type D	Data Type T	Raw Data / Comments
37. **PATHWAY SCORE (S_{sw})** (Sum of scores from Line 36 for all watersheds evaluated, maximum of 100)	100	8.518					XXX	

SURFACE WATER PATHWAY CALCULATIONS

10. Drinking Water Targets

Actual Contamination - N/A

Intake	Contaminant Detected	Concentration	Benchmark	(A) Population	(B) Level* Divisor	(A/B)
					Sum (A/B) Level I	
					Sum (A/B) Level II	
					Sum (A/B) Level III	

* Divisors
- Level I = 1
- Level II = 10
- Level III = 100

Reference: E & E 1989a; ODWR 1989a

Potential Contamination - N/A

Intake	Average Stream Flow	(DW) Dilution Factor (Table 4-11)	(P) Population Served	(DW × P)
			Sum (DW × P)	

Potential contamination = $\frac{\text{Sum}(DW \times P)}{100}$ =

Reference: E & E 1989a; ODWR 1989a

18. Food Chain Targets

Fishery	Production (lb/yr)	Assigned Production Value (Table4-15)	Bioaccumulation Factor Value	(P) Assigned Population Value (Table4-16)	Average Stream Flow at Fishery	(DW) Dilution Weighting Factor (Table4-11)	(P×DW)
Willamette River	8,000	4	6	160,000	7,000	0.005	800
Intermittent Stream	0	1	6	160	80	0.100	16
Swan Lake	0	1	6	160	80	0.100	16
Waverly Lake	0	1	6	160	80	0.100	16
Small Stream	0	1	6	160	80	0.100	16
			Sum (P)			Sum(P×DW)	864

For fisheries with Actual Contamination, Food Chain Targets = Sum (P) =

For fisheries with Potential Contamination, Food Chain Targets = $\frac{\text{Sum(DW} \times \text{P)}}{100} = \frac{864}{100} = 8.64 = 9$

Reference: ODWR 1989a; E & E 1989a

SURFACE WATER CALCULATIONS (Cont.)

26. **Human Recreation Targets**

Recreation Area: Recreational Targets were not evaluated

Accessibility/Attractivenss Factor (AAF) Value: Capital improvements

Distance limit: 125 miles

Distance (miles)	(A) Multiplier (Table 4-20)	(P) Population	(A × P)
0 to <5			
5 to <10			
10 to <20			
20 to <40			
40 to <60			
60 to <80			
80 to <100			
100 to <125			
		Sum (A × P)	

A) Recreation use population value (RU) = (AAF) × Sum (A × P) = _____

B) Assign RU value from Table 4-21: _____

C) Dose adjusting factor: _____

D) Assign Human Recreation population value from Table 4-22: _____

E) Actual Human Recreation Target Population = (value from 26.D) × (0.10) =

F) Potential Human Recreation Target Population = (value from 26.D) × (Dilution weighting factor)/100 = 0

Reference: E & E 1989a

SURFACE WATER CALCULATIONS (Cont.)

33. Environmental Targets

Actual Contamination - N/A

Sensitive Environment	(A) Assigned Value (Table 2-18 or 2-19)	(B) Level Multiplier*	(A x B)
		Sum (A x B) Level I	
		Sum (A x B) Level II	

* Multipliers
- Level I = 10
- Level II = 1

Reference: USGS 1970; E & E 1989a

Potential Contamination

Sensitive Environment	(A) Assigned Value (Table 2-18 or 2-19)	Average Stream Flow (cfs)	(DW) Dilution Weighting Factor (Table 4-11)	(A x DW)
Wetlands	75	80	0.1	7.5
Wetlands	75	7,000	0.005	0.375
			Sum of (A x DW)	7.875

Potential contamination = $\frac{\text{Sum (A x DW)}}{10} = \frac{7.875}{10} = 0.7875$

Reference: USGS 1970; ODWR 1989a; E & E 1989a

Calculations: In the space below, document all assumptions, estimates and calculations involved in assigning a projected HRS value.

SURFACE WATER

Containment

There is no containment or runoff control system to prevent contaminants from migrating to surface water (E & E 1989a).

Drinking Water Use

Surface water is not currently used for drinking.

Human Food Chain

Surface water is used to irrigate food crops within 15 miles downstream of the site (ODWR 1989a). The Willamette River is used for sport fishing with an estimated production of 8,000 pounds per year.

SSI PRESCORE SCORESHEETS

PHASE II FIELD TESTING ON-SITE EXPOSURE PATHWAY SCORESHEET

Factor Categories and Factors	Max Value	Preliminary HRS Value Assigned	Projected HRS Value Assigned	Data Type H	Data Type E	Data Type D	Data Type T	Raw Data / Comments
RESIDENT POPULATION THREAT							XXX XXX XXX	
1. LIKELIHOOD OF RELEASE	100	0					XXX XXX	No documented release
2. WASTE CHARACTERISTICS	5	0					XXX XXX	
Toxicity	5	0					XXX XXX	
3. TARGETS							XXX XXX	
a. High Risk Population	100	0					XXX XXX	
b. Total Resident Population	100	0					XXX XXX	
c. Terrestrial Sensitive Environments	25	0					XXX XXX XXX XXX	
d. Targets (Lines a+b+c, maximum of 100)	100	0					XXX XXX XXX XXX	
4. RESIDENT POPULATION THREAT (Lines 1x2x3d)	5×10^4	0					XXX XXX XXX XXX	
NEARBY POPULATION THREAT							XXX XXX XXX	
5. LIKELIHOOD OF EXPOSURE							XXX XXX	
a. Waste Quantity	100	4					XXX XXX	E & E 1989a
b. Accessibility/Frequency of Use	100	50					XXX XXX XXX XXX	E & E 1989a
c. Likelihood of Exposure (Value from Table 5-5)	100	10					XXX XXX XXX XXX	E & E 1989a
6. WASTE CHARACTERISTICS							XXX XXX	
Toxicity	5	5					XXX XXX	PCBs = 5
7. TARGETS							XXX XXX	
a. Nearby Population	100	21					XXX XXX	
8. NEARBY POPULATION THREAT (Lines 5cx6x7a)	5×10^4	1,050					XXX XXX XXX XXX	10 x 5 x 21 = 1,050
9. **PATHWAY SCORE (S_{os})** (Lines [4+8]/500, maximum of 100)	100	2.1					XXX XXX XXX XXX XXX	0 + 1,050 = 1,050/500 = 21

ON-SITE EXPOSURE CALCULATIONS

7. Nearby Population Targets

Distance (miles)	(A) Multiplier	(P) Population	(A × P)
0 to 1/4	0.10	30	3.0
>1/4 to 1/2	0.05	80	4.0
>1/2 to 1	0.025	578	14
		Sum (A × P)	21

Reference: USGS 1970; E & E 1989a

Calculations: In the space below, document all assumptions, estimates and calculations involved in assigning a projected HRS value.

ON-SITE PATHWAY

Nearby Population

Residential areas exist within 0.1 mile of the site. Population were estimated by conducting house count based on a topographical map (USGS 1970; E & E 1989a).

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